中文题目：基于 WRF 的上海浦东机场一次平流雾过程数值模拟试验
作者：林彩燕*，张中锋，蒲朝霞，王峰云

本文基于 WRF 模式，以华东空管局气象中心业务化运行设置参数作为控制试验，对上海浦东机场一次平流雾过程进行一系列的模拟试验，分析不同物理过程和不同预报提前量对平流雾发生、演变和消散过程模拟的影响。结果表明：微物理参数方案对此次平流雾的消散过程有显著的影响，而对雾发生的起始时刻影响不敏感；边界层方案、长波和短波辐射方案对雾的生消时刻、云水分布等均有显著的影响；不同预报提前量对此次雾过程的起始时刻、维持时段等的影响也比较大，综合考虑模式 spin-up 时间和较好初始场的合适预报提前量能够提供较为准确的雾的模拟结果。本文揭示的各物理过程和不同预报提前量对平流雾过程模拟的复杂影响为进一步研究改进雾的数值模拟提供了基础。

文章结构图：

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                          WRF模式
                            │
                  浦东机场一次平流雾过程模拟
                            │
                         敏感性试验
     ┌──────────┬──────────┼──────────┬──────────┐
  预报提前量   微物理参数化  边界层参数化  长波辐射方案  短波辐射方案
     │          │          │          │          │
 需要权衡准确的  敏感于雾的演变  敏感于雾生消演  敏感于雾生消演  略微敏感于雾生
 初始场和合适的  消散过程而非初  变全过程      变全过程      消过程
 预报提前量     始过程
     └──────────┴──────────┼──────────┴──────────┘
              模式初始场的不确定性和物理参数化
                    过程的不确定性
                            │
                雾模拟（预报）的主要不确定性来源
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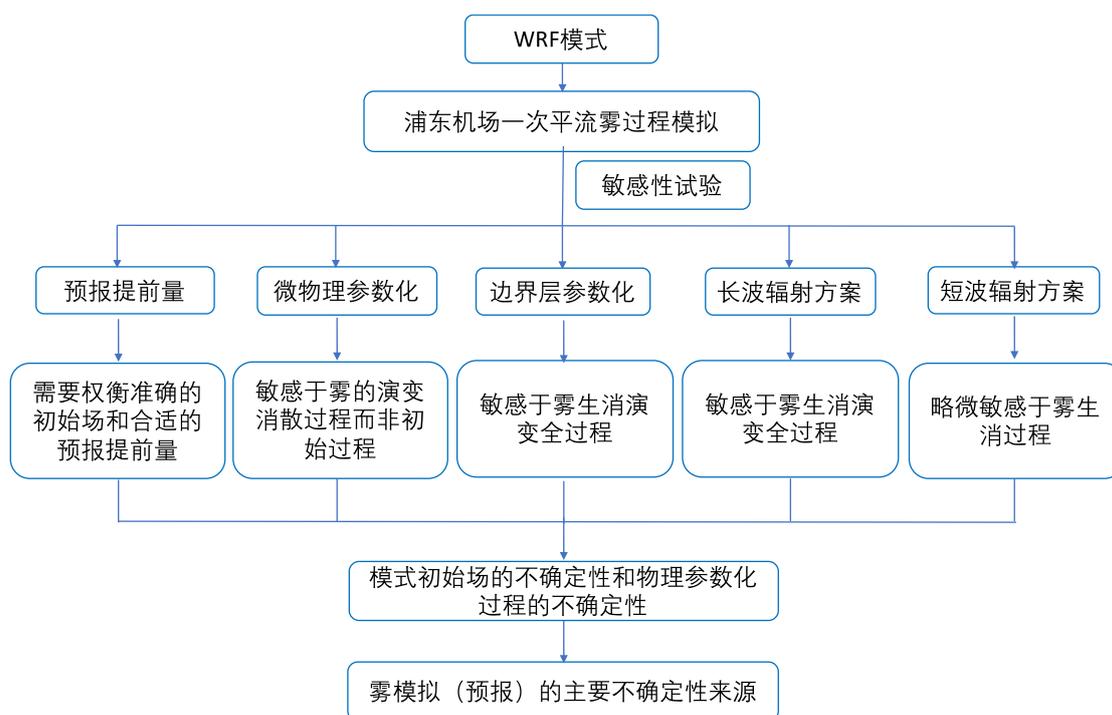
英文题目：Numerical Simulations of an Advection Fog Event over the Shanghai Pudong international Airport with the WRF Model
作者：LIN Caiyan*, ZHANG Zhongfeng, PU Zhaoxia, and WANG Fengyun.

英文摘要：A series of numerical simulations is conducted to understand the prediction and controlling processes of the formation, evolution, and dissipation of an advection fog event over the Shanghai Pudong International Airport (ZSPD) with the Weather Research and Forecasting

(WRF) model. Using the current operational settings at the Meteorological Center of East China Air Traffic Management Bureau, the WRF model predicts the fog event at ZSPD well. Additional numerical experiments are performed to examine the physical processes associated with the fog event. Results also indicate that the prediction of this particular fog event is sensitive to microphysical schemes for the time of fog dissipation but not for the time of fog onset. The simulated timing of the arrival and dissipation of the fog, as well as the cloud distribution, is substantially sensitive to the planetary boundary layer and radiation (both longwave and shortwave) processes. Moreover, varying forecast lead times also produce different simulation results for the fog event regarding its onset and duration, suggesting a trade-off between more accurate initial conditions (short forecast lead time) and a proper forecast lead time that allows model physical processes to spin-up adequately during the fog simulation. The overall outcomes from the case study in this paper imply the complication of physical processes and their interactions within the numerical model during the fog evolution and dissipation is a large area of future research.